Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A method comprising:

transmitting a first signal comprising OFDM transmission units, each OFDM transmission unit comprising an OFDM symbol, and before/and/or/after the OFDM symbol a respective non-OFDM segment(s) containing known data and/or unknown highly reliable data, the non-OFDM segment allowing a conversion at a receiver between a linear convolution and a cyclic convolution for the OFDM symbol.

2. (Original) A method according to claim 1 wherein the non-OFDM segment of each OFDM symbol is at least long enough to cover any significant ISI introduced by a previous OFDM symbol.

3. (Original) A method according to claim 1 wherein the non-OFDM segment comprises a code separated pilot channel, signalling channel, and traffic channel.

4. (Original) A method according to claim 1 wherein the non-OFDM segment contains multiple channels which are time division multiplexed.

5. (Original) A method according to claim 4 wherein the multiple channels comprise a pilot channel time segment, signalling and traffic channel time segment during which the signalling and traffic channels are code separated, and another pilot channel segment in sequence.

6. (Original) A method according to claim 4 wherein the multiple channels comprise a traffic channel time segment, a pilot channel time segment and a signalling channel time segment in sequence.

7. (Original) A method according to claim 1 further comprising:

generating the OFDM symbols using fixed duration with varying IFFT size.

8. (Original) A method according to claim 1 further comprising:

generating the non-OFDM segments to have fixed durations with varying numbers of samples.

9. (Previously Presented) A method according to claim 1 wherein the first signal further comprises a guard time on either side of each non-OFDM segment.

10. (Previously Presented) A method according to claim 1 wherein OFDM transmission units are embodied in slots which are 2048 chips in duration, and each slot comprising a first OFDM symbol which is 400 chips in duration followed by a 224 chip duration non-OFDM segment, followed by a second OFDM symbol and third OFDM symbol each of which are 400 chips in duration, followed by a 224 chip duration non-OFDM segment followed by a fourth OFDM symbol which is 400 chips in duration.

11. (Previously Presented) A method according to claim 10 wherein each non-OFDM segment comprises a 64 chip MAC segment, a 96 chip pilot segment and a 64 chip MAC segment in sequence.

12. (Previously Presented) A method according to claim 11 wherein the non-OFDM segments are fully compliant with 1xEV/DO forward link structure, and the first signal has a slot timing which is fully compliant with 1xEV/DO forward link structure.

13. (Previously Presented) A method according to claim 12 wherein each OFDM symbol is a 400 sub-carrier IFFT.

14. (Previously Presented) A method according to claim 12 wherein each OFDM symbol is a 208 sub-carrier IFFT.

15. (Original) A method according to claim 1 wherein said first signal is transmitted from a first antenna, the method further comprising transmitting a second signal from a second antenna the

second signal comprising OFDM transmission units each OFDM transmission unit comprising a respective OFDM symbol and before/and/or/after each OFDM symbol a respective non-OFDM segment containing known data and/or unknown highly reliable data, the non-OFDM segment allowing a conversion at a receiver between a linear convolution and a cyclic convolution.

16. (Previously Presented) A method according to claim 15 wherein each signal comprises slots which are 2048 chips in duration, and each slot comprising a first OFDM symbol which is 400 chips in duration followed by a 224 chip duration non-OFDM segment, followed by a second OFDM symbol and third OFDM symbol each of which are 400 chips in duration, followed by a 224 chip duration non-OFDM segment followed by a fourth OFDM symbol which is 400 chips in duration, the OFDM transmission units being embodied in the slots.

17. (Previously Presented) A method according to claim 16 wherein each non-OFDM segment comprises a 64 chip MAC segment, a 96 chip antenna specific pilot segment and a 64 chip MAC segment in sequence.

18. (Previously Presented) A method according to claim 17 wherein the non-OFDM segments are fully compliant with 1xEV/DO forward link structure, and the first signal has a slot timing which is fully compliant with 1xEV/DO forward link structure.

19. (Original) A method according to claim 1 further comprising:

transmitting as part of said first signal CDMA transmission units, each CDMA transmission unit comprising a CDMA data segment and containing before/and/or/after each CDMA data segment a respective non-OFDM segment containing known non-zero data and/or unknown highly reliable data;

wherein the signal contains a sequence of transmission units some of which are scheduled to be OFDM transmission units and some of which are scheduled to be CDMA transmission units.

20. (Original) A method according to claim 19 wherein the non-OFDM segments and CDMA data segments are fully backward compatible with existing IS-856 specifications.

21. (Original) A method according to claim 19 wherein the first signal comprises slots which are 2048 chips in duration, and each slot comprising a first data segment which is 400 chips in duration followed by a 224 chip duration non-OFDM segment, followed by a second data segment and third data segment each of which are 400 chips in duration, followed by a 224 chip duration non-OFDM segment followed by a fourth data segment which is 400 chips in duration wherein each of the data segments is scheduled to be either a CDMA data segment or an OFDM data segment, the sequence of transmission units being embodied in the slots.

22. (Original) A method according to claim 21 wherein each non-OFDM segment comprises a 64 chip MAC segment, a 96 chip pilot segment and a 64 chip MAC segment in sequence.

23. (Original) A method according to claim 1 further comprising:

transmitting data content of multiple users on the OFDM symbols.

24. (Previously Presented) A method according to claim 23 wherein for each user having data content on a given OFDM symbol a respective band of sub-carriers is used, the respective band comprising a subset of an overall OFDM sub-carrier set.

25. (Previously Presented) A method according to claim 24 further comprising:

for each user, performing frequency hopping of the respective band of sub-carriers.

26. (Previously Presented) A method according to claim 23 further comprising:

during the non-OFDM segments transmitting for each user a respective user specific pilot channel, the user specific pilot channels are overlapping in time but are orthogonal to each other.

27. (Previously Presented) A method according to claim 26 wherein:

the first signal comprises slots which are 2048 chips in duration, and each slot comprising a first OFDM symbol which is 400 chips in duration followed by a 224 chip duration non-OFDM segment, followed by a second OFDM symbol and third OFDM symbol each of

which are 400 chips in duration, followed by a 224 chip duration non-OFDM segment followed by a fourth OFDM symbol which is 400 chips in duration, the OFDM transmission units being embodied in the slots.

28. (Previously Presented) A method according to claim 27 wherein each non-OFDM symbol comprises a 64 chip signalling segment, a respective 96 chip pilot segment for each user, and a 64 chip signalling segment in sequence, the pilot segments being overlaid in time and being orthogonal to each other.

29. (Previously Presented) A method according to claim 19 wherein the signal comprises an alternating sequence of CDMA transmission units and OFDM transmission units, the method further comprising performing power control over the CDMA transmission units.

30. (Original) A method according to claim 1 wherein the OFDM transmission units are embodied in a sequence comprising:

3 tail bits;

a 58 point IDFT as an OFDM symbol;

26 bit training sequence;

a second 58 point IDFT as another OFDM symbol;

3 tail bits;

an 8.25 bit duration guard period wherein the tail bits and or the training sequence function as the non-OFDM segment.

31. (Previously Presented) A method according to claim 1 further comprising:

transmitting as part of said signal GSM transmission units, wherein the signal contains a sequence of transmission units some of which are scheduled to be OFDM transmission units and some of which are scheduled to be CDMA transmission units;

wherein the transmission units are embodied in a sequence comprising:

3 tail bits;

a 58 point IDFT as an OFDM symbol for an OFDM transmission unit, or 57 bits of data and a one bit stealing flag for a GSM transmission unit;

26 bit training sequence;

a second 58 point IDFT as another OFDM symbol for an OFDM transmission unit or 57 bits of data and a one bit stealing flag for a GSM transmission unit;

3 tail bits;

an 8.25 bit duration guard period wherein the tail bits and or the training sequence function as non-OFDM segment.

32. (Previously Presented) A method according to claim 1 wherein the first signal comprises 15 slot frames, the first signal comprising a primary SCH, secondary SCH, pilot channel, and dedicated channel overlaid together as a CDMA signal, the CDMA signal being overlaid in time with said OFDM symbols.

33. (Previously Presented) A method according to claim 32 wherein portions of said CDMA signals function as said non-OFDM segments.

34. (Previously Presented) A method according to claim 32 wherein during each slot, the first signal comprises two OFDM transmission units, each OFDM transmission unit comprising a 128 chip prefix, a 1024 point IFFT, and a 128 chip suffix.

35. (Previously Presented) A method according to claim 34 wherein each 28 chip prefix contains a designed training sequence, and each 128 chip suffix contains system information, broadcast information or short messaging information.

36. (Previously Presented) A method according to claim 32 wherein during each slot, the first signal comprises one OFDM transmission unit, each OFDM transmission unit comprising a 128 chip prefix, a 2024 point IFFT, and a 128 chip suffix.

37. (Previously Presented) A method according to claim 1 for use with a UMTS downlink modified to include an OFDM overlay.

38. (Previously Presented) A method according to claim 1 adapted for use with IEEE-802.11 a/g system with a variable non-OFDM segment and/or blind non-OFDM segment detection.

39. (Previously Presented) A method according to claim 1 adapted for use with IEEE 802.16a systems.

40. (Cancelled)

41. (Cancelled)

42. (Cancelled)

43. (Cancelled)

44. (Cancelled)

45. (Cancelled)

46. (Cancelled)

47. (Currently Amended) A method according to claim 32 further comprising performing channel estimation to recover a discretized time domain channel estimate by:

for a first non-OFDM segment <u>of said non-OFDM segment(s)</u> containing J known or highly reliable samples, followed by an OFDM symbol, followed by a second non-OFDM segment <u>of said non-OFDM segments</u> containing J (or another number) known or highly reliable samples, defining a plurality of equations relating received samples during the first and second non-OFDM segments to corresponding known/highly reliable values as a function of L samples of a discretized channel response, and solving the equations for the L samples of the discretized channel response, where there are at least L equations.

48. (Previously Presented) A method according to claim 47 further comprising performing an FFT on the discretized channel response to generate a frequency domain channel response.

49. (Previously Presented) A method according to claim 47 further comprising:

demodulating contents of the non-OFDM segments using the time domain channel estimate.

50. (Previously Presented) A method according to claim 47 further comprising:

demodulating contents of the prefix using the improved time domain channel estimate.

51. (Cancelled)

52. (Cancelled)

53. (Cancelled)

54. (Original) A transmitter comprising:

a first transmit antenna;

OFDM signal generating circuitry for generating OFDM symbols for transmission;

non-OFDM signal generating circuitry for generating non-OFDM segments;

wherein the OFDM signal generating circuitry and the non-OFDM signal generating circuitry are adapted to generate and transmit through the first transmit antenna a first signal comprising OFDM transmission units, each OFDM transmission unit comprising an OFDM symbol, and before/and/or/after the OFDM symbol a respective non-OFDM segment(s) containing known data and/or unknown highly reliable data, the non-OFDM segment allowing a conversion at a receiver between a linear convolution and a cyclic convolution for the OFDM symbol.

55. (Original) A transmitter according to claim 54 wherein the non-OFDM segment of each OFDM symbol is at least long enough to cover any significant ISI introduced by a previous OFDM symbol.

56. (Original) A transmitter according to claim 54 wherein the non-OFDM segment comprises a code separated pilot channel, signalling channel, and traffic channel.

57. (Original) A transmitter according to claim 54 wherein the non-OFDM segment contains multiple channels which are time division multiplexed.

58. (Original) A transmitter according to claim 57 wherein the multiple channels comprise a pilot channel time segment, signalling and traffic channel time segment during which the signalling and traffic channels are code separated, and another pilot channel segment in sequence.

59. (Original) A transmitter according to claim 57 wherein the multiple channels comprise a traffic channel time segment, a pilot channel time segment and a signalling channel time segment in sequence.

60. (Original) A transmitter according to claim 57 adapted to generate the OFDM symbols using fixed duration with varying IFFT size.

61. (Previously Presented) A transmitter according to claim 54 wherein OFDM transmission units are embodied in slots which are 2048 chips in duration, and each slot comprising a first OFDM symbol which is 400 chips in duration followed by a 224 chip duration non-OFDM segment, followed by a second OFDM symbol and third OFDM symbol each of which are 400 chips in duration, followed by a 224 chip duration non-OFDM segment followed by a fourth OFDM symbol which is 400 chips in duration.

62. (Original) A transmitter according to claim 54 wherein each non-OFDM segment comprises a 64 chip MAC segment, a 96 chip pilot segment and a 64 chip MAC segment in sequence.

63. (Previously Presented) A transmitter according to claim 62 wherein the non-OFDM segments are fully compliant with 1xEV/DO forward link structure, and the first signal has a slot timing which is fully compliant with 1xEV/DO forward link structure.

64. (Original) A transmitter according to claim 54 wherein the non-OFDM signal generating circuitry comprises CDMA signal generation circuitry adapted to transmit as part of said first

signal CDMA transmission units, each CDMA transmission unit comprising a CDMA data segment and containing before/and/or/after each CDMA data segment a respective non-OFDM segment containing known non-zero data and/or unknown highly reliable data;

wherein the first signal contains a sequence of transmission units some of which are scheduled to be OFDM transmission units and some of which are scheduled to be CDMA transmission units.

65. (Previously Presented) A transmitter according to claim 54 wherein the OFDM transmission units are embodied in a sequence comprising:

3 tail bits;

a 58 point IDFT as an OFDM symbol;

26 bit training sequence;

a second 58 point IDFT as another OFDM symbol;

3 tail bits;

an 8.25 bit duration guard period wherein the tail bits and or the training sequence function as the non-OFDM segment.

66. (Previously Presented) A transmitter according to claim 54 wherein:

the non-OFDM signal generating circuitry comprises GSM signal generating circuitry adapted to transmit as part of said signal GSM transmission units, wherein the signal contains a sequence of transmission units some of which are scheduled to be OFDM transmission units and some of which are scheduled to be CDMA transmission units;

wherein the transmission units are embodied in a sequence comprising:

3 tail bits;

a 58 point IDFT as an OFDM symbol for an OFDM transmission unit, or 57 bits of data and a one bit stealing flag for a GSM transmission unit;

26 bit training sequence;

a second 58 point IDFT as another OFDM symbol for an OFDM transmission unit or 57 bits of data and a one bit stealing flag for a GSM transmission unit;

3 tail bits;

an 8.25 bit duration guard period wherein the tail bits and or the training sequence function as non-OFDM segment.

67. (Previously Presented) A transmitter according to claim 54 for use with a UMTS downlink modified to include an OFDM overlay.

68. (Previously Presented) A transmitter according to claim 54 adapted for use with IEEE-802.11 a/g system with a variable non-OFDM segment and/or blind non-OFDM segment detection.

69. (Previously Presented) A transmitter according to claim 54 adapted for use with IEEE 802.16a systems.

70. (Previously Presented) A transmitter according to claim 54 wherein the non-OFDM signal generation circuitry comprises 1xEV/DO signal generation circuitry.

71. (Original) A transmitter according to claim 54 further comprising:

a second transmit antenna;

wherein the OFDM signal generation circuitry and the non-OFDM signal generation circuitry are further adapted to generate and transmit through the second antenna a second signal comprising OFDM transmission units each OFDM transmission unit comprising a respective OFDM symbol and before/and/or/after each OFDM symbol a respective non-OFDM

segment containing known data and/or unknown highly reliable data, the non-OFDM segment allowing a conversion at a receiver between a linear convolution and a cyclic convolution.

72. (Previously Presented) A transmitter according to claim 54 wherein the non-OFDM signal generating circuitry is compatible with IS-856 specifications.

73. (Previously Presented) A transmitter according to claim 54 wherein the non-OFDM signal generating circuitry is compatible with GSM specifications.

Claims 74 to 92 (Cancelled)